Division of Cancer Treatment and Diagnosis (DCTD)

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Program Director, Division of Cancer Treatment and Diagnosis, NCI

Cancer Imaging Program

NIH NATIONAL CANCER INSTITUTE

July 19, 2021

NCI Organization

Extramural

- Division of Cancer Biology
- Division of Cancer Control and Population Sciences
- Division of Cancer prevention
- Division of Extramural activities
- Division of Cancer Treatment and Diagnosis

Intramural

- Center for Cancer Research
- Division of Cancer Epidemiology and Genetics

Division of Cancer Treatment and Diagnosis (DCTD)

- Cancer Imaging Program
- Cancer Diagnosis Program
- Cancer Therapy Evaluation Program
- Radiation Research Program
- Biometric research Program
- Development Therapeutics Program
- Translational Research Program
- Office of Cancer Complementary and Alternative Medicine
- Office of Cancer Clinical Proteomics Research

DCTD: Common Themes

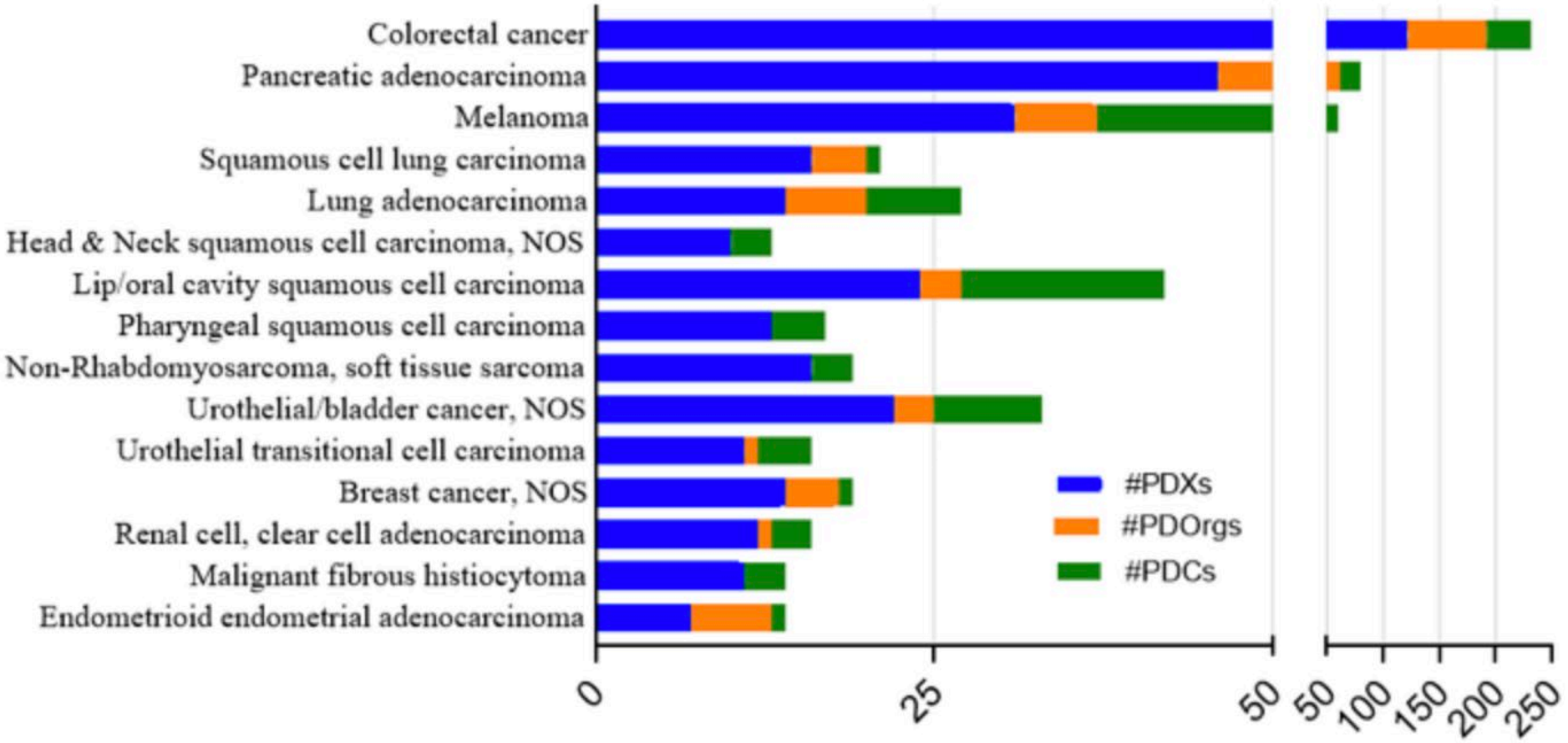
Diagnosis and Treatment

- Cancer Biology
- Molecular Imaging
- Nanotechnology
- Target identification,
- Drug development
- Clinical trials
- Imaging: diagnosis, treatment planning; radiation therapy treatment evaluation
- Technology development
- Biobanks, genomic, proteomic and imaging archives
- Information Technologies
  - Artificial Intelligence
  - Algorithm development
  - Machine learning
  - Revolutionary computing
  - Treatment Planning
  - Predictive analysis
  - Robotics

DCTD: Major Initiatives

- NCI Clinical Trials Stewardship Initiative
- NCI-supported Precision Medicine Oncology
- Developmental Therapeutics Clinic (DTC)
- NCI Experimental Therapeutics (NExT) Program
- NCI Formulary
- NCI Patient-Derived Models Repository (PDMR)
- NCTN/NCORP Data Archive
- Specialized Programs of Research Excellence
- Quantitative Imaging Network
- Co-Clinical Imaging Resources Program
- Cancer Moonshot: Biobank

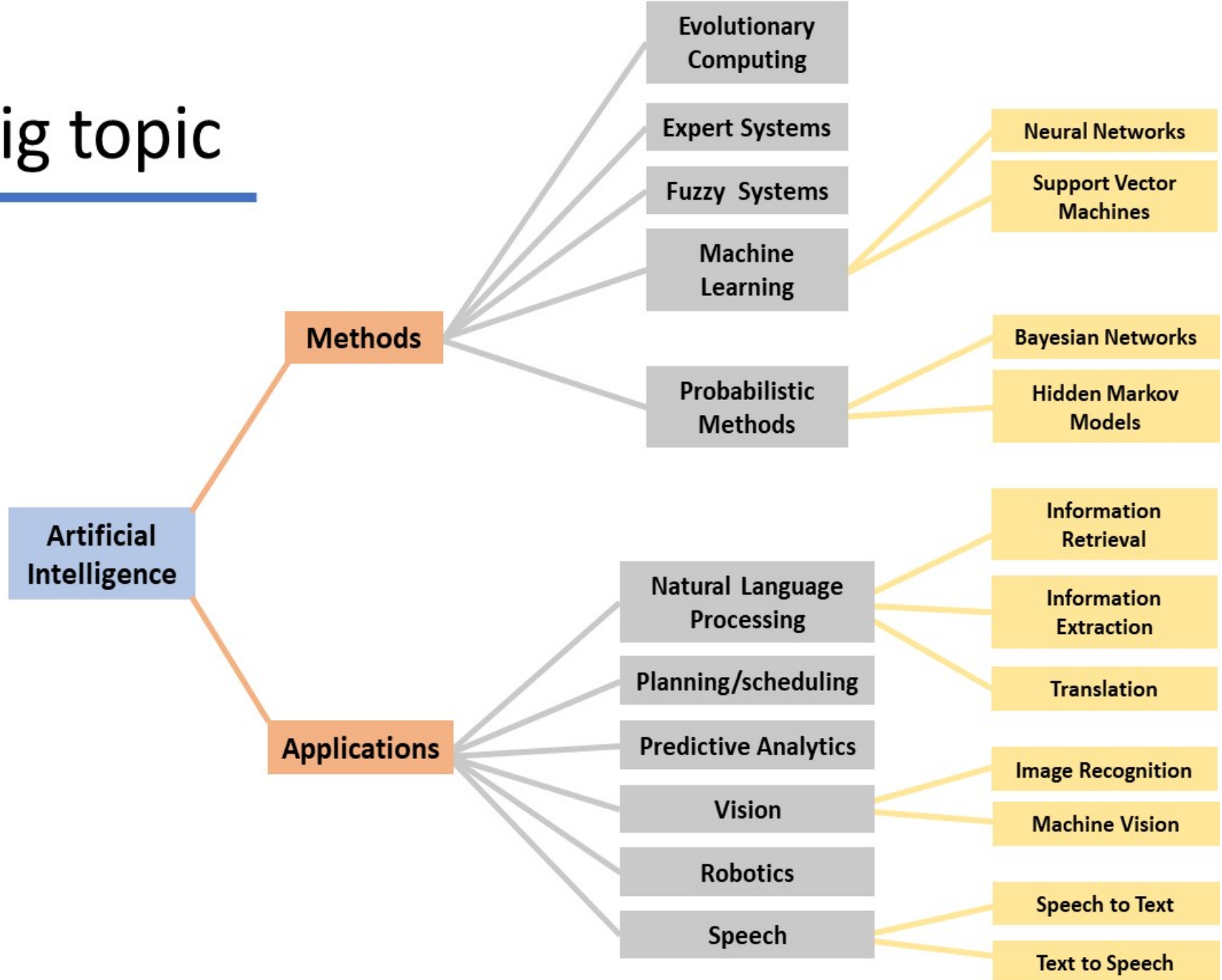
The NCI Patient-Derived Models Repository (PDMR)



Cancer Diagnoses, Types, and Numbers of Publicly Available PDMR Models as of May 2021


Study of “exceptional responders” yields clues to cancer and potential treatments - More…

AI is a big topic



Ref: National Academy of Medicine White Paper 2019

Cancer Imaging Program (CIP)

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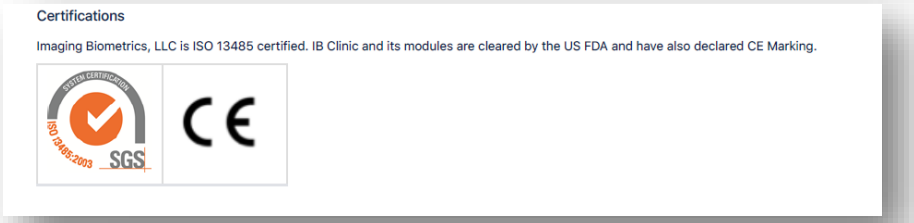
CIP: Focus Areas and Funding Support

- Investigator initiated R01 grants
- Academic Industrial Partnerships
- Nanotechnology
- Quantitative Imaging
- Information Technologies for Cancer Research (ITCR)
- Bioengineering Research Partnerships and Grants (BRP/BRG)
- Innovative Molecular Analysis Technologies in Cancer Research (IMAT)
- Small Business grants and contracts (SBIR/STTR)

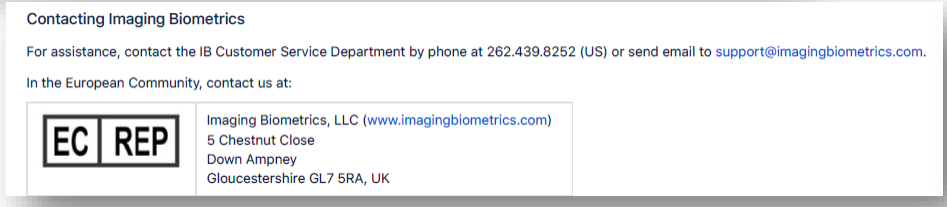
QIN Tools Ready for Clinical Trials (An Example)


ImagingBiometrics
CREATING THE STANDARD

IB Clinic® 2.0 User Manual


Certifications

Imaging Biometrics, LLC is ISO 13485 certified. IB Clinic and its modules are cleared by the US FDA and have also declared CE Marking.


Contacting Imaging Biometrics

For assistance, contact the IB Customer Service Department by phone at 262.439.8252 (US) or send email to support@imagingbiometrics.com.

In the European Community, contact us at:

EC REP

Imaging Biometrics, LLC (www.imagingbiometrics.com)
5 Chestnut Close
Down Ampney
Gloucestershire GL7 5RA, UK

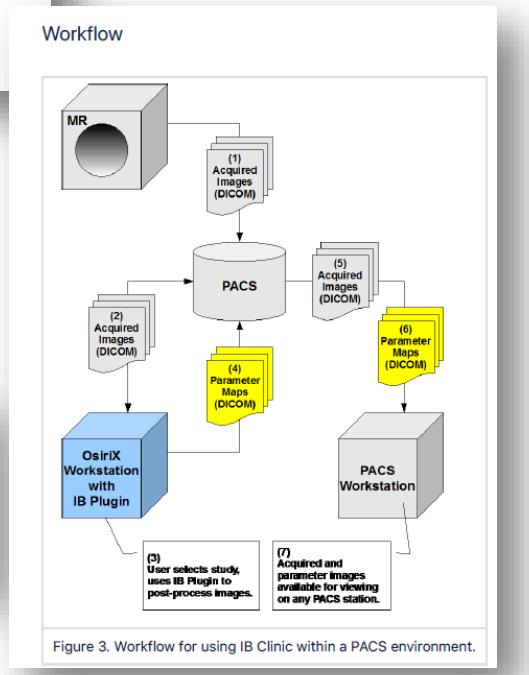


Figure 3. Workflow for using IB Clinic within a PACS environment.

IB Clinic is a FDA-cleared and CE marked set of tools which perform and streamline brain image post-processing.

- Standardized and proven algorithms
- Default settings to allow generation of parametric images with 3 or 4 clicks
- Automatic brain mask generation
- Automatic leakage correction
- Ability to integrate with multiple PACS to access acquired data and distribute results
- Automatic arterial/vascular input function generation
- Longitudinal reporting

Developing Molecular Imaging Capabilities

Cancer Biology

Identify cancer inflammation targets for imaging

Target identification
Cells, cytokines, growth factors, Chemical gradients etc

- Target specificity
- Stability

in vitro

Imaging

Synthesize imaging agents
Validate imaging approaches

- **Apply Fast imaging technologies**
- **Adapt probe chemistry and designs to inflammation cellular physiology targets**

Targeting Molecules

+ imaging
(MRI, PET, SPECT, CT, US, Optical, multi-modality)

***In vivo* Imaging**
Image Acquisition, Biodistribution, Data Analysis

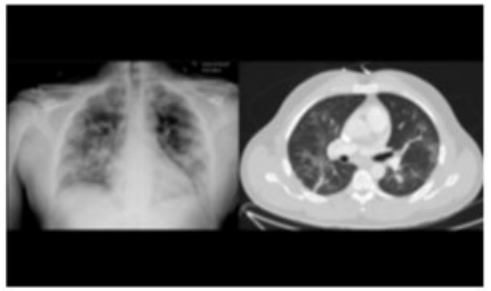
- Target specificity
- Stability, biodistribution & toxicity
- sensitivity & specificity

in vivo

Develop molecular imaging approaches for characterizing the dynamics of cancer associated inflammation

THE CANCER IMAGING ARCHIVE

The Cancer Imaging Archive posts COVID-19 imaging data to benefit community



The Frederick National Lab (FNL) has published an article about TCIA's COVID-19 response efforts!

"Publicly available datasets related to COVID-19 are appearing in an unexpected place—the Cancer Imaging Archive (TCIA), a project of the Division of Cancer Treatment and Diagnosis of the National Cancer Institute.

Since the start of the pandemic, researchers around the world have been racing to learn as much as possible about the virus—how it spreads, how to diagnose and treat it, and how to develop vaccines against it. One way to help speed up scientific discovery is data sharing."

Read the full article here and find the COVID Collections available on TCIA here.

FNL newsletter
February 2021 by Justin Kirby

Cancer Diagnosis Program (CDP)

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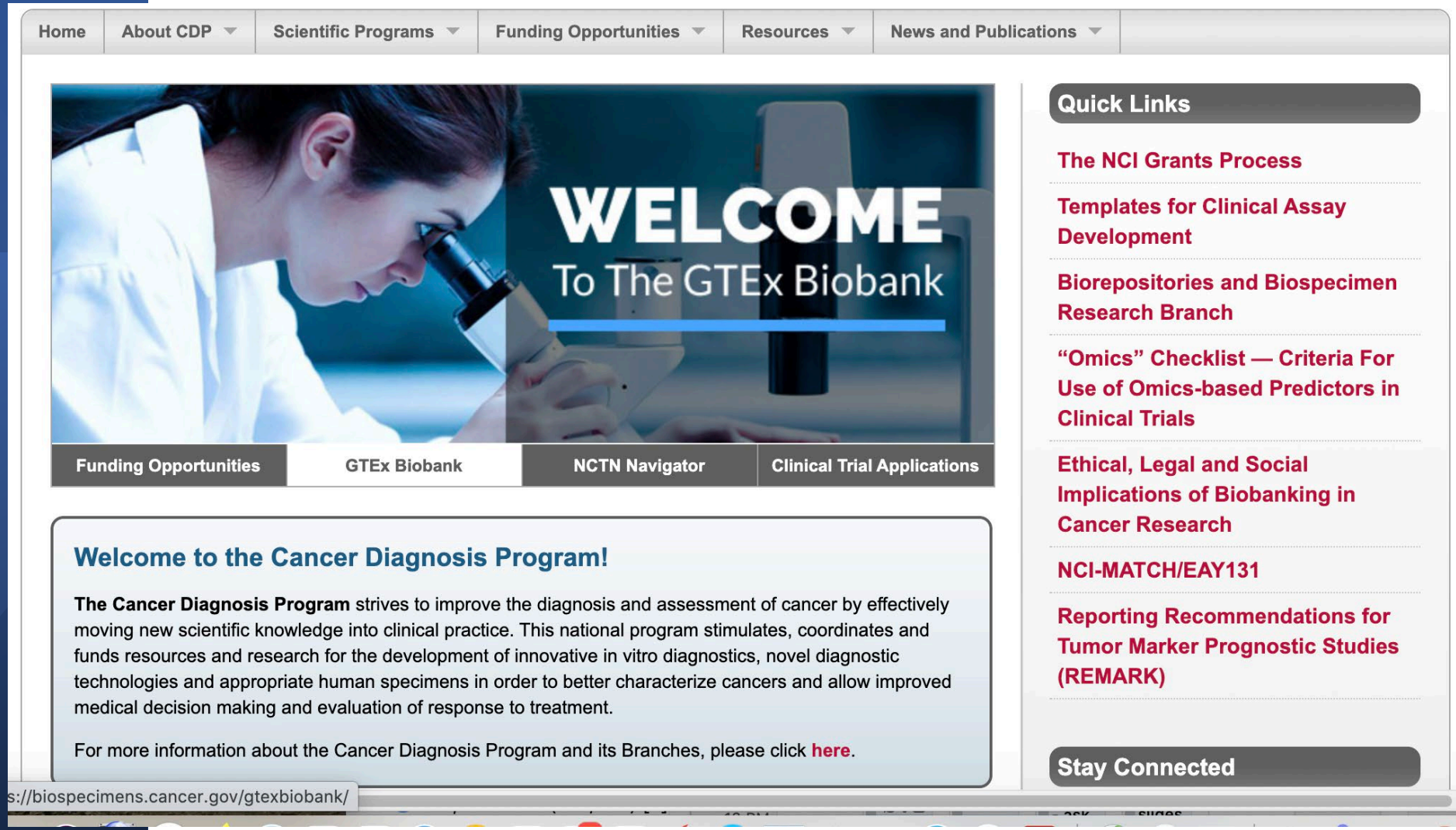
CDP Improve the diagnosis and assessment of cancer



Cancer Diagnosis Program (CDP)

Biorepository and Biospecimen Research Branch

Diagnostic Biomarkers and Technology Branch

Diagnostic Evaluation Branch

Pathology Investigation and Resources

National Cancer Institute's Investigator-Initiated Early Phase Clinical Trials for Cancer Treatment and Diagnosis (R01 Clinical Trial Required): PAR-21-033

NCI Clinical and Translational Exploratory/Developmental Studies (R21 Clinical Trial Optional): PAR-20-292

Academic-Industrial Partnerships for Translation of Technologies for Diagnosis and Treatment (R01 — Clinical Trial Optional): PAR-18-530

Cancer Therapy Evaluation Program (CTEP)

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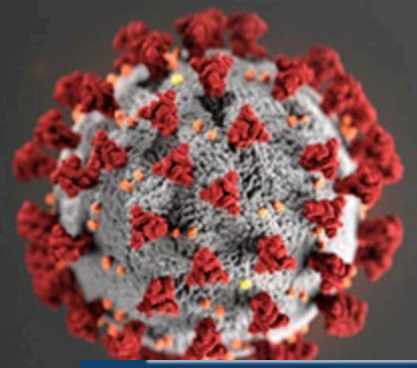
Guidance for NCI Clinical Trial Activities Affected by the Novel Coronavirus

More...



NCI National Clinical Trials Network

a National Cancer Institute program

NCTN Overview

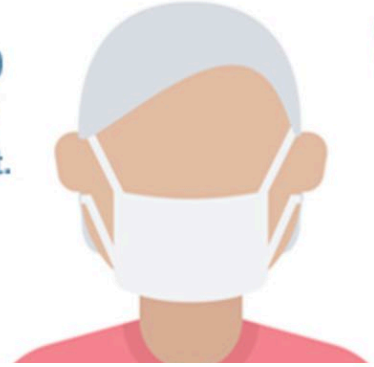
NCI transformed its longstanding Cooperative Group Program into the new NCI National Clinical Trials Network (NCTN) Program. More...

Cancer Therapy Evaluation Program

Early Drug Development

How Does COVID-19 Affect People with Cancer? NCCAPS Will Help Find Out.

More...



NCI-COG Pediatric MATCH (Molecular Analysis for Therapy Choice) is a phase 2 clinical trial for children and adolescents with advanced solid tumors – including non-Hodgkin lymphomas, brain tumors, and histiocytoses – that have not responded to treatment or have progressed on standard therapy. More...

Experimental Trials Networ

The National Canc in the pharmaceuti individual investiga innovative cancer t Clinical Trials Netw these therapies us inclusive team-bas

Cancer Therapy Evaluation Program (CTEP)

Career Development Opportunities

CTEP recognizes the importance of encouraging and supporting young investigators as they embark upon a clinical cancer research career. We have implemented several programs geared to assist young investigators navigate the CTEP program and the LOI development and submission process. These programs include:

- **Early Career Investigator Development LOI**
- Other Early Career Development Resources
  - **2018 ASCO Early Career Investigator Meeting** (PDF)
  - **ETCTN Overview** (PDF)
  - **Letters of Intent (LOI) Basics** (PDF)
  - **Drug Project Team Basics** (PDF)
- **Radiopharmaceutical Development Initiative**
- **CTEP/IDB Externship Fellow Program**

Program Offering	**CTEP Investigation Drug Branch (IDB) Externship Program**

Radiation Research Program (RRP)

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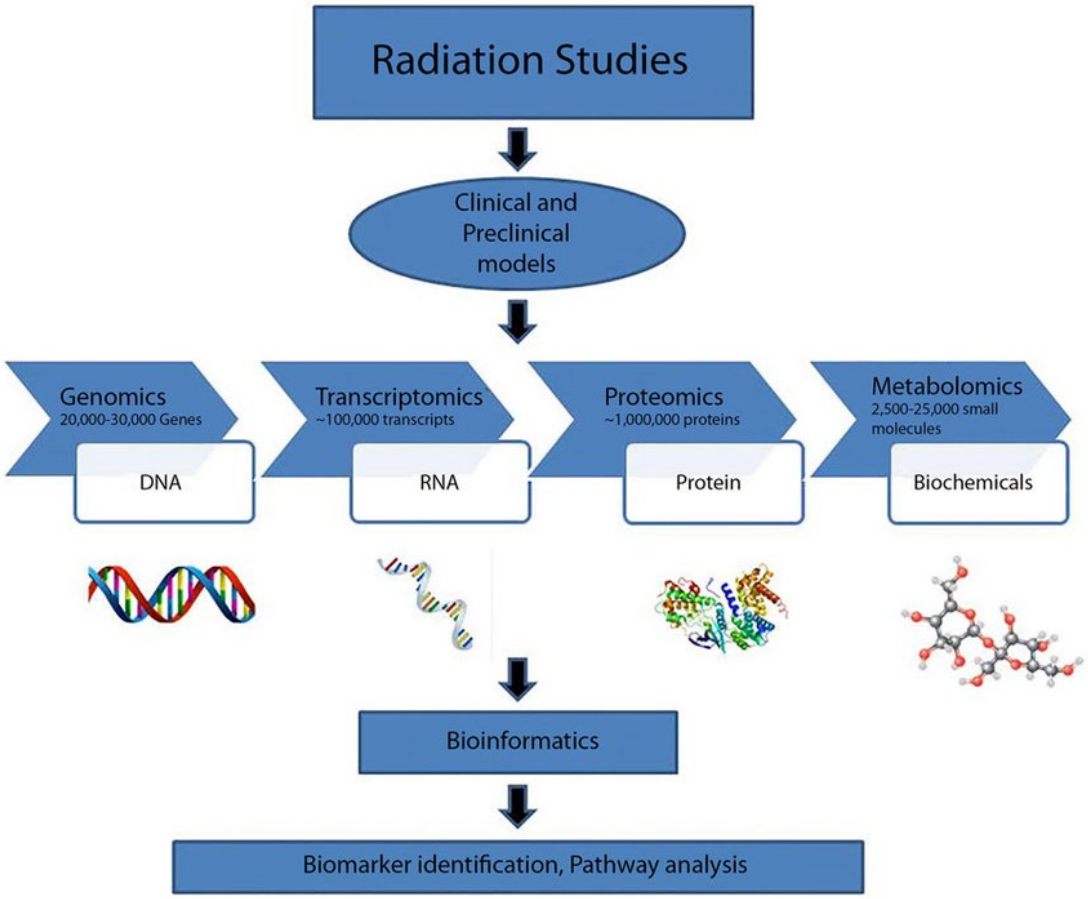
Radiation Research Program (RRP)

Focused on Novel Radiotherapy Research

Supports research across the radiation sciences spanning clinical trials, combined modality radiotherapy, experimental therapeutics, radiation treatment planning, radiobiology, physics and technology.

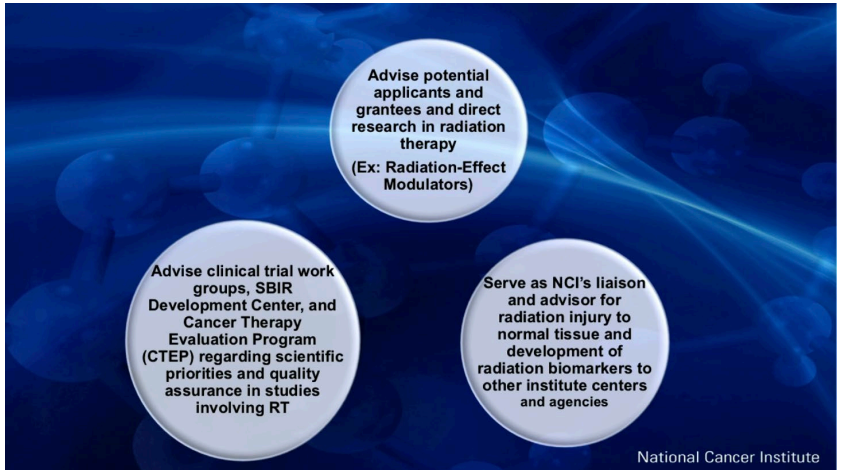


Also coordinates activities of the RRP Program with related programs within the NCI and NIH that address cancer health disparities, including global health.

Radiation Research Program (RRP)

Radiation Research Program Interest Groups

IGs collectively support development of clinical trials that incorporate radiation approaches, development of guidelines for the field, organization of workshops, and publication of editorials and reports.



[Brain Metastases & GBM]

[Hepatocellular Carcinoma Interest Group]

[Quantitative Imaging in Radiation Therapy Interest Group]

[Immunotherapy & Radiation Interest Group]

[Sarcoma Interest Group]

[Gastrointestinal Malignancy Interest Group]

[TRT Interest Group]

Development Therapeutics Program (DTP)

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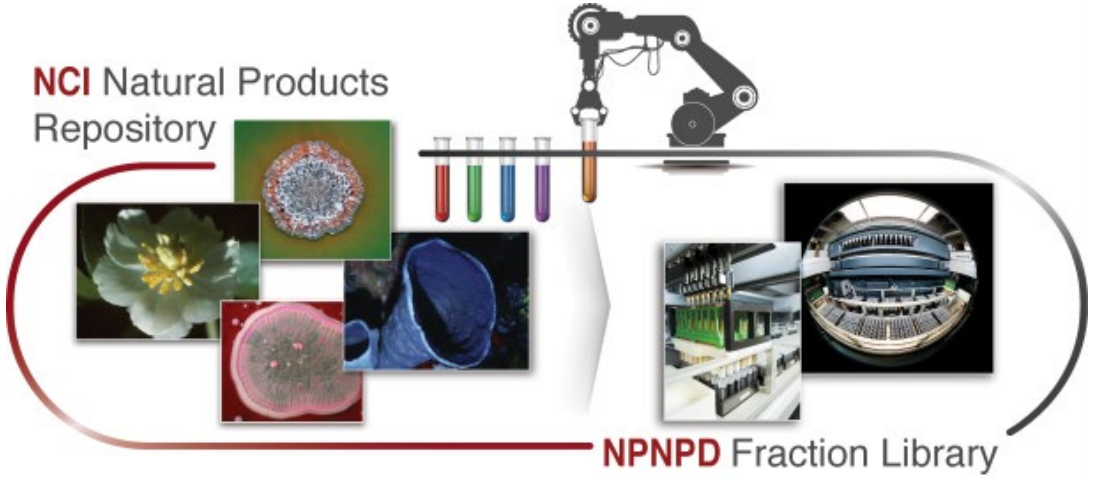
Developmental Therapeutics Program (DTP)

The NCI Development Therapeutics Program (DTP) provides services and resources to the academic and private-sector research communities worldwide to facilitate the discovery and development of new cancer therapeutic agents



Funding Opportunity Announcement:

[PAR-17-331 Discovery of Small Molecule Immunomodulators for Cancer Therapy (R01)]

Translational Research Program (TRP)

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Translational Research Program (TRP)

Office of Cancer Complementary and Alternative Medicine (OCAM)

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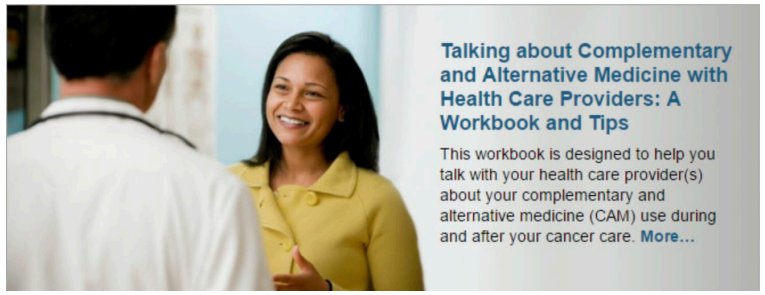
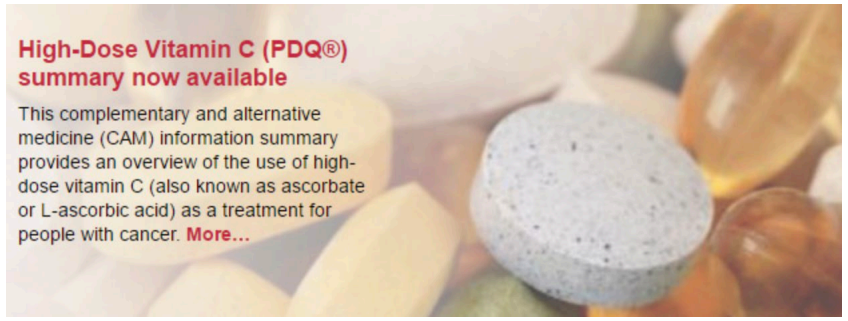
Office of Cancer Complementary and Alternative Medicine (OCAM)

Established in October 1998 to coordinate and enhance the activities of the National Cancer Institute (NCI) in the arena of complementary and alternative medicine (CAM)

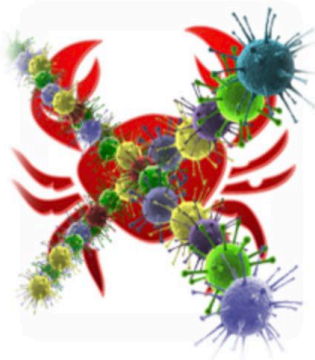


International Activities:

- **Chinese Medicine**
- **Indian Medicine**
- **Research Resources**



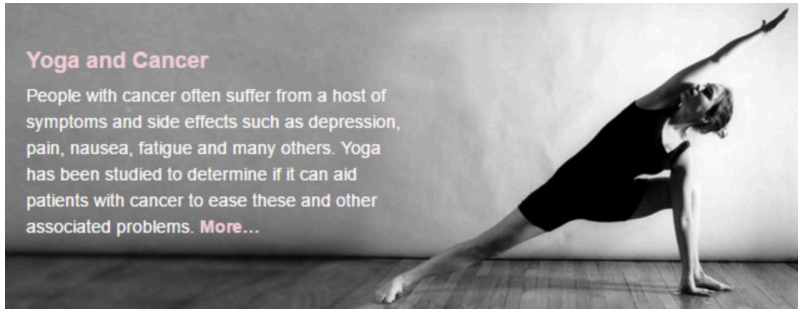
Microbial-based Cancer Therapy - Bugs as Drugs



R21 for early stage research- PAR 19-194

R01 For mature projects- PAR-193

Technologies to Overcome Cancer



DCTD Funding Opportunities

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Trans-DCTD
Funding Opportunities

- Proteome Characterization Centers (PCCs) for Clinical Proteomic Tumor Analysis Consortium **(U24) RFA CA 21-023**
- Proteogenomic Data Analysis Centers (PGDACs) for Clinical Proteomic Tumor Analysis Consortium **(U24) RFA CA 21-024**
- Proteogenomic Translational Research Centers (PTRCs) for Clinical Proteomic Tumor Analysis Consortium **(U21) RFA CA 21-025**
- NCI Clinical and Translational Exploratory/Developmental Studies - **(R21) PAR 20-293**

DCTD related Trans-NCI Funding Opportunities

- Oncology Co-Clinical Imaging Research Resources **(U24) PAR 18-841**
- Small Cell Lung Cancer (SCLC) Consortium: Biology, Therapy and Resistance **(U01) PAR 19-361**

- Microbial-based Cancer Therapy - Bugs as Drugs **(R01) PAR 19-193**
- Microbial-based Cancer Therapy - Bugs as Drugs **(R21) PAR 19-194**
- NCI Clinical and Translational Exploratory/Developmental Studies - **(R21) PAR 20-293**
- Revision Applications for Validation of Biomarker Assay Development **(R01) PAR 20-074**

DCTD related Trans-NIH Funding Opportunities

- Advancing Translational and Clinical Probiotic/Prebiotic and Human Microbiome Research **(R01) PAR 18-902**
- Bioengineering Research Grants (BRG) **(R01) PAR 19-158**
- Exploratory/Developmental Bioengineering Research Grants (EBRG) **(R21) PA- 149 (150)**
- Mechanisms and Consequences of Sleep Disparities in the U.S.**(R01) PAR 20-164**
- Small Research Grants for Analyses of Gabriella Miller Kids First Pediatric Research Data **(R03) PAR-375**
- Academic-Industrial Partnerships for Translation of Technologies for Diagnosis and Treatment **(R01) PAR 21-166**

Major Initiatives

DCTD Programs

Biometric Research Program
Cancer Diagnosis Program
Cancer Imaging Program
Cancer Therapy Evaluation Program
Developmental Therapeutics Program
Radiation Research Program
Translational Research Program
Office of Cancer Clinical Proteomics Research

Last Updated: 03/22/2021

Major Initiatives

- **NCI Clinical Trials Stewardship Initiative**
  Information on NCI's efforts to advance the public health impact of cancer trials through the implementation of key NIH policies affecting the conduct and management of NCI-funded clinical trials.
- **NCI-supported Precision Medicine Oncology Research Activities**
  Information on NCI-supported precision medicine clinical trials and research networks.
- **Developmental Therapeutics Clinic (DTC)**
  Develops new treatments for patients with advanced cancer through innovative early-phase clinical trials.
- **NCI Experimental Therapeutics (NExT) Program**
  Advances clinical practice and brings improved therapies to patients with cancer by supporting the most promising new drug discovery and development projects.

Last Updated: 05/04/2021

Funding Opportunity Announcements (FOAs)

DCTD Programs | Trans-DCTD | Trans-NCI | Trans-NIH

Funding Opportunities through DCTD's Programs

Visit the websites of DCTD's individual programs for more information on currently available funding opportunities.

- Cancer Diagnosis Program
- Cancer Imaging Program
- Cancer Therapy Evaluation Program
- Developmental Therapeutics Program
- Radiation Research Program

DCTD Programs

Biometric Research Program

Cancer Diagnosis Program

Cancer Imaging Program

Cancer Therapy Evaluation Program

Developmental Therapeutics Program

Radiation Research Program

Translational Research Program

Office of Cancer Clinical Proteomics Research

Office of Cancer Complementary and Alternative Medicine

FOLLOW DCTD

Grantsmanship Resources – NCI

NCI-wide Funding

NCI Office of Grants Administration

NCI Division of Extramural Activities

The NCI Grants Process

Guidelines and Tools for Clinical Protocol Development

Grantsmanship Resources – NIH

NIH Parent Announcements

Office of Extramural Research

Grant Application Basics

Center for Scientific Review

Small Business Funding Opportunities

New and Early Stage Investigator Policies

Questions??

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